

First record of *Hastula hastata* (Gmelin, 1791) (Mollusca: Conoidea: Terebridae) from Trindade Island, a southwestern Atlantic oceanic island off Brazil

Daniel Abbate* and Patricia Oristanio Vaz de Lima

Universidade de São Paulo, Museu de Zoologia, Avenida Nazaré, 481, Ipiranga, CEP 04218-970, São Paulo, SP, Brazil.
* Corresponding author. E-mail: danielabbate@usp.br

ABSTRACT: The terebrid gastropod *Hastula hastata* (Gmelin, 1791) is reported for the first time from Trindade Island, off southeastern Brazil. The new record extends the known geographic range of the species ca. 1,167 km eastward from Vitória, Espírito Santo state.

The Terebridae exhibit the most homogeneous shells among the seven conoidean families (Bouchet and Rocroi 2005). Geographically and ecologically, it is the most restricted family, occurring primarily on sand at shallow, subtidal depths, in the tropics and some subtropical regions (Bratcher and Cernohorsky 1987). There are 411 extant species in 17 genera according to the most recent systematic synthesis (Gofas 2013).

Most terebrids are infaunal in clean, fine to coarse sand in shallow subtidal habitats. They burrow to depths usually not exceeding the length of the shell. *Hastula* species often occur in or just below the “surf” zone on sloping sand beaches. *Hastula* is characterized by a smooth, shiny shell, with axial sculpture of crenulations or slender ribs below the suture. There is no spiral sculpture except for a subsutural groove or row of punctations (Kohn 1998).

Hastula hastata (Gmelin, 1791) is a common species in the western Atlantic occurring from Florida, USA, to Rio de Janeiro, Brazil (Rios 2009; Rosenberg 2009).

In July, 2013, one live specimen was collected during scuba dive at Orelhas Bay, Trindade Island, off Espírito Santo state, Brazil ($20^{\circ}29'40.2''$ S, $29^{\circ}20'32.9''$ W), at 12 m depth (Figure 1). The specimen was collected during the day and was buried in sandy substrate, near rocks covered totally by calcareous algae. The Brazilian Navy does not allow night diving around the island and the terebrids have nocturnal habits (Miller 1975; Kohn 1998). Perhaps this was why only one specimen was found. The collection was made during the austral winter, but the water temperature at Trindade Island remains high throughout the year, about 24°C on average.

Permits were granted by Environmental Agency of the Brazilian Government, ICMBio/SISBIO (Instituto Chico

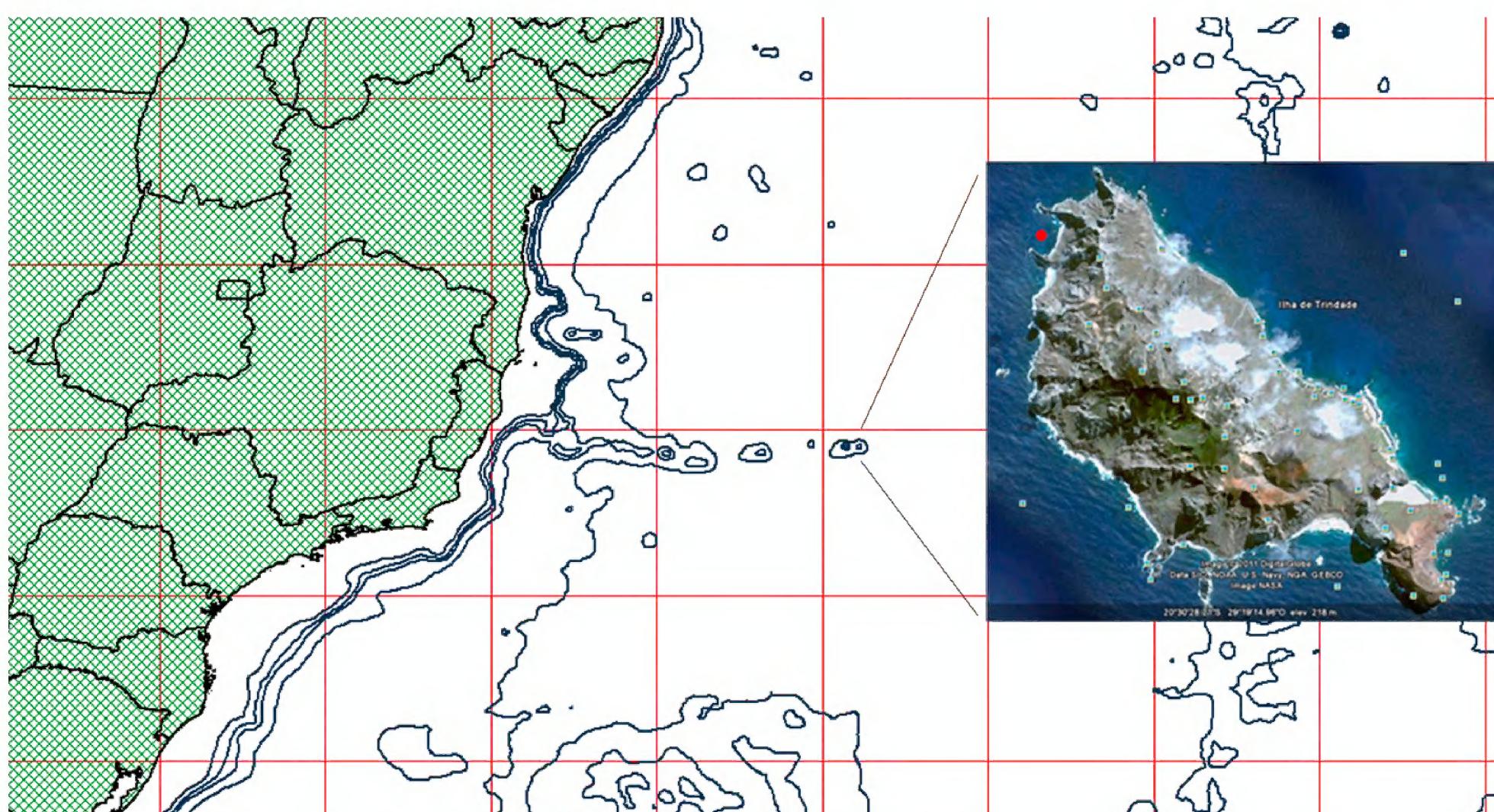


FIGURE 1. Red dot: Location of the new record. Orelhas Bay, Trindade Island, Espírito Santo state.

Mendes de Conservação da Biodiversidade), under license 26780.

The specimen from Trindade Island resembles those reported from other locations and compares well with the descriptions by Abbott (1974) and Rios (2009). It is about 30 mm long, within the size range recorded for the species (up to 37 mm) (Rios 2009); it is glossy and smooth, except for numerous axial ribs (24 on the body whorl) that extend from suture to suture. It is bright yellow with a white band below the suture. The columella is smooth, without plicae, and white (Figure 2). In addition, it was collected in the clean sandy bottom. The specimen collected is deposited in the Museu de Zoologia da Universidade de São Paulo (MZSP) malacological collection, registered under code MZSP 114262 (Trindade).

The new record extends the range of the species within Espírito Santo state *ca.* 1,167 km eastward, from off Vitória

(40° W) (Rosenberg 2009) to Trindade Island (29° W). The species has a wide distribution occurring from Florida (USA) to Rio de Janeiro (Brazil) (Abbott 1974; Rios 2009). However, this distribution is mainly latitudinal and close to the coast (Abbott 1974; Rios 2009; Terryn 2013). The present paper reports a large longitudinal range extension of *H. hastata*. This wide distribution suggests a possible lecithotrophic larval stage that allows for long permanence in the plankton (Miller 1975). Lecithotrophic larvae have the capacity to maintain gene flow and genetic connectivity across vast expanses of open ocean (Kirkendale and Meyer, 2004). Moreover, this new distributional record may help towards the understanding of connectivity patterns between the marine molluscan faunas of oceanic islands and the South American continent, for example, along the Vitória-Trindade Seamount Chain (Fernandes *et al.* 2013).

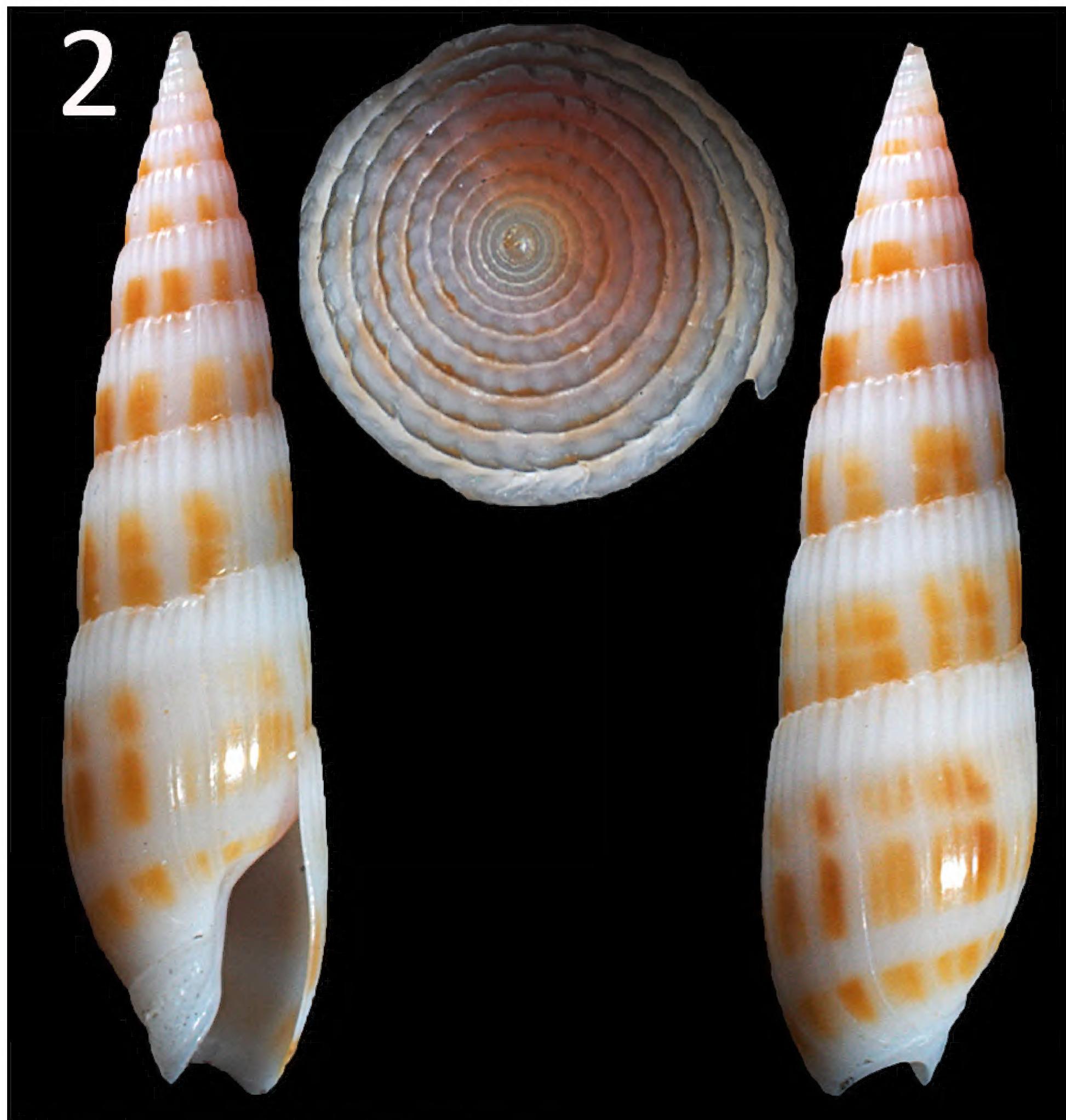


FIGURE 2. *Hastula hastata* (MZSP 114262). Length = 29.6 mm, width = 6.0 mm.

ACKNOWLEDGMENTS: The authors would like to thank Protrindade program, Brazilian Navy, Luiz R. L. Simone and Daniel Cavallari for many helpful comments. This work was supported by CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico), procs. 557166/2009-8.

LITERATURE CITED

Abbott, R.T. 1974. *American Seashells: The Marine Mollusca of the Atlantic and Pacific Coasts of North America*. 2nd ed. New York: Van Nostrand Reinhold. viii + 663 pp.

Bouchet, P. and J.-P. Rocroi. 2005. Classification and nomenclature of gastropod families. *Malacologia* 47(1-2): 1-397.

Bratcher, T. and W.O. Cernohorsky. 1987. *Living Terebras of the World. A Monograph of the Recent Terebridae of the World*. Melbourne, Florida: American Malacologists. 240 pp.

Fernandes, M.R., A.D. Pimenta and J.H. Leal. 2013. Taxonomic review of Triphorinae (Gastropoda: Triphoridae) from the Vitória-Trindade Seamount Chain, southeastern Brazil. *The Nautilus* 127(1): 1-18.

Gofas, S. 2013. *Terebridae. World Register of Marine Species*. Accessed at <http://www.marinespecies.org/aphia.php?p=taxdetails&id=160424>. Captured on 24 September 2013.

Kirkendale, L.A. and C.P. Meyer. 2004. Phylogeography of the *Patelloidea profunda* group (Gastropoda: Lottiidae): diversification in a dispersal-driven marine system. *Molecular Ecology* 13(9): 2749-2762.

Kohn, A.J. 1998. Infraorder Neogastropoda, Superfamily Conoidea; pp. 846-854, in: Beesley, L.P., G.J.B. Ross and A. Wells (ed.). *Mollusca: the Southern Synthesis*. Part B. Melbourne: CSIRO Publishing.

Miller B.A. 1975. The biology of *Terebra gouldi* Deshayes, 1859, and a discussion of life history similarities among other terebrids of similar proboscis type. *Pacific Science* 29(3): 227-241.

Rios, E.C. 2009. *Compendium of Brazilian Sea Shells*. Rio Grande: Evangraf. 668 pp.

Rosenberg, G. 2009. *Malacolog 4.1.1: A Database of Western Atlantic Marine Mollusca*. Accessed at: <http://www.malacolog.org.org>. Captured on 01 March 2013.

Terryn, Y. (2013). *Hastula hastata* (Gmelin, 1791). *World Register of Marine Species*. Accessed at <http://www.marinespecies.org/aphia.php?p=taxdetails&id=420227>. Captured on 11 December 2013.

RECEIVED: August 2013

ACCEPTED: December 2013

PUBLISHED ONLINE: February 2014

EDITORIAL RESPONSIBILITY: Robert Forsyth